



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,678	06/27/2003	Jai-Moo Yoo	69650/RSM	8273
7590 08/31/2006			EXAMINER	
Cooper & Dunham LLP 1185 Avenue of Americas New York, NY 10036			WONG, EDNA	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,678

Applicant(s)

YOO ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 8 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5 and 8 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 24 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Art Unit: 1753

This is in response to the Amendment dated July 24, 2006. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Response to Arguments

Specification

The disclosure has been objected to because of minor informalities.

The objection of the drawings has been withdrawn in view of Applicants' amendment.

Claim Objections

Claims 1-5 have been objected to because of minor informalities.

The objection of claims 1-5 has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 112

Claims 1-5 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 1-5 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

I. Claims **1 and 3** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 01/83855** ('855).

The rejection of claims 1 and 3 under 35 U.S.C. 103(a) as being unpatentable over WO 01/83855 ('855) has been withdrawn in view of Applicants' amendment.

II. Claim **2** has been rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 01/83855** ('855) as applied to claims 1 and 3 above, and further in view of **Lowenheim** ("Electroplating", © 1978, pp. 212-213).

The rejection of claim 2 under 35 U.S.C. 103(a) as being unpatentable over WO 01/83855 ('855) as applied to claims 1 and 3 above, and further in view of Lowenheim has been withdrawn in view of Applicants' amendment.

III. Claims **4 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 01/83855** ('855) as applied to claims 1 and 3 above, and further in view of **Van Horn** ("Pulse Plating", Dynatronix, August 5, 1999, pp. 1-13).

The rejection of claims 4 and 5 under 35 U.S.C. 103(a) as being unpatentable over WO 01/83855 ('855) as applied to claims 1 and 3 above, and further in view of Van Horn has been withdrawn in view of Applicants' amendment.

Response to Amendment

Drawings

The drawings were received on July 24, 2006. These drawings are approved by the Examiner.

Claim Rejections - 35 USC § 112

Claims 5 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5

line 10, "the deposited pure metal or alloy layer" lacks antecedent basis.

Claim 8

lines 4-5, it appears that "a cathode" is the same as the metal substrate recited in claim 1, lines 13-14. However, it is unclear if it is. If it is not, then what is the relationship between the cathode and the metal substrate? See also claim 8, lines 5-6, 11-12 and 14.

line 9, "a cylindrical-type" is indefinite. See MPEP § 2173.05(b)(E).

lines 9-10, "a belt-shaped cylindrical-type" is indefinite. See MPEP § 2173.05(b)(E).

Art Unit: 1753

line 11, it appears that "a biaxially textured metal layer" is the same as the deposited biaxially textured metal layer recited in claim 1, line 16. However, it is unclear if it is. If it is not, then what is the difference between the biaxially textured metal layer and deposited biaxially textured metal layer?

line 13, it appears that the "peeling" is the peeling recited in claim 1, line 16. However, it is unclear if it is. If it is not, then what is the relationship between the two peeling steps?

line 13, it appears that "the electroplated biaxially textured metal layer" lacks antecedent basis.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

Art Unit: 1753

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims **1-5 and 8** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims **5-9** of copending Application No. **11/074,568** (Yoo et al.). Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter claimed in the instant application is fully disclosed in the copending application and would be covered by any patent granted on the copending application since the copending application and the instant application are claiming common subject matter, as follows:

(a) depositing a biaxially textured layer by an electroplating process on the surface of a metal substrate having a single-crystalline or similarly higher orientation; and

(b) peeling the deposited biaxially textured layer off the metal substrate.

The independent claims of the instant application recites similar limitations, either alone or in combination with their dependent claims, as that of the claims of the copending application wherein the claims of the instant application encompasses the claims of the copending application. Therefore, the claims would have been obvious variants over each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

I. Claims 1, 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **DE 101 36 890** ('890), **Kruger et al.** (US Patent Application Publication No. 2004/0206630 A1), **WO 01/83855** ('855) and **Ameen et al.** (US Patent No. 6,361,673 B1).

Kruger is the English equivalent of DE '890.

Kruger teaches a method for manufacturing a biaxially textured metal material comprising the steps of:

(a) depositing a biaxially textured surface metal layer 4 (= a biaxially textured metal layer) [page 1, [0011]; and page 2, [0031]] by an electroplating process such as a direct current electroplating process (DC process), a pulse current electroplating process (PC process), and a periodic reverse current plating process (PR process) [= a direct current is deemed *inherent*] (page 2, [0029] and [0030]; and Figs. 1 and 2) on the surface of a metal substrate 1 (= an endless substrate strip) having a crystalline orientation (page 1, [0009] and [0010]); and

(b) peeling (= pulled off as a textured strip) [page 1, [0014]] the deposited biaxially textured metal layer 4a (= a textured strip) off the metal substrate wherein the peeled biaxially textured metal layer has substantially the same texture orientation as that of the metal substrate (= the endless substrate strip has a texture) [page 2, [0019]].

The method further comprises the steps of:

(i) installing a plating apparatus (Figs. 1 and 2) comprising an anode and a cathode **21** dipped in a plating solution **22**, wherein the surface of the cathode is made of at least one of the following selected from the group consisting of: a biaxially textured metal material and a single crystal (= a biaxially textured metal layer is used as the substrate strip) [page 1, [0011]], and wherein the cathode form is selected from the group consisting of a cylindrical-type and a belt-shape cylindrical-type (= a roller **21**) [page 2, [0033]; and Fig. 2];

(ii) rotating the cathode to form a biaxially textured metal layer on the cathode (= a texture metal layer **24** starts to grow in each case from the immersion region **23** of the roller **21** into the electroplating bath **22**) [page 2, [0033]]; and

(iii) peeling the electroplated biaxially textured metal layer **24a** off the cathode (= as a textured strip **24a** of metal, is pulled off the roller **21** by means of a pull off roll **26** as a pulling-off device) [page 2, [0033]].

The method of Kruger differs from the instant invention because Kruger does not disclose the following:

a. Wherein the orientation is a single-crystalline or a quasi-single-crystalline orientation, as recited in claim 1.

Like Kruger, WO '855 teaches manufacturing a biaxially textured metal material (page 3, lines 9-12).

WO '855 teaches that a single crystal orientation can support the high currents

required by many applications of superconductors (page 1, lines 4-13).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the crystalline orientation of the metal substrate described by Kruger with wherein the orientation is a single-crystalline or a quasi-single-crystalline orientation because a single crystal orientation can support the high currents required by many applications of superconductors as taught by WO '855 (page 1, lines 4-13).

b. Wherein the biaxially textured metal layer is deposited in a plating solution at a cathode current density of $3\sim 20\text{ A/dm}^2$, using the direct current electroplating process (DC process), the deposited metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane, as recited in claim 3.

WO '855 teaches electrodepositing a metal layer on a biaxially textured metal substrate such that the surface of the metal layer has the same texture as that of the substrate (page 3, lines 9-12). The current density is typically from 1 to 50000 A/m^2 (page 7, line 31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the direct current electroplating process described by Kruger with wherein the biaxially textured metal layer is deposited in a plating solution at a cathode current density of $3\sim 20\text{ A/dm}^2$ because a current density from 1 to 50000 A/m^2 would have been typical in electrodepositing a metal layer on a biaxially

textured metal substrate such that the surface of the metal layer has the same texture as that of the substrate as taught by WO '855 (page 7, line 31).

As to wherein the deposited metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane, similar processes can reasonably be expected to yield products which inherently have the same properties. *In re Spada* 15 USPQ 2d 1655 (CAFC 1990); *In re DeBlauwe* 222 USPQ 191; *In re Wiegand* 86 USPQ 155 (CCPA 195).

c. Winding the layer on a take-up reel, as recited in claim 8.

Kruger teaches pulling a textured metal strip **24a** of metal off the roller **21** by means of a pull off roll **26** as a pulling-off device (page 2, [0033]).

Like Kruger, Ameen teaches an electroforming cell **10** comprising a drum cathode **12** (col. 3, lines 29-42; and Fig. 1). Ameen teaches that a foil passes around guide roller **102** and is wound onto a take-up roll **104** (col. 6, line 24-26).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by DE '890 by winding the layer on a take-up reel because a foil that passes around guide rollers would have been wound onto a take-up roll as taught by Ameen (col. 6, line 24-26).

The selection of old parts to operate in new environments in order to achieve the same results was held to have been obvious. *In re Ross* 105 USPQ 237. And the substitution of known equivalent structures was held to have been obvious. *In re Ruff*

Art Unit: 1753

118 USPQ 343 (CCPA 1958).

II. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **DE 101 36 890** ('890), **Kruger et al.** (US Patent Application Publication No. 2004/0206630 A1) and **WO 01/83855** ('855) as applied to claims 1, 3 and 8 above, and further in view of **Lowenheim** ("Electroplating", © 1978, pp. 212-213).

DE '890, Kruger and WO '855 are as applied above and incorporated herein.

The method of Kruger differs from the instant invention because Kruger does not disclose wherein the biaxially textured metal is electroplated in a plating solution comprising 100~400 g/l nickel sulfate, 0~70 g/l nickel chloride, 20~80 g/l boric acid, 0~50 g/l sodium sulfate, 0~10 g/l sodium tungstate and 0~10 g/l cobalt chloride at pH 1.5~7 and 50~80°C, as recited in claim 2.

Kruger teaches that the textured strip consists of **nickel or nickel alloy** (page 2, [0025]).

WO '855 teaches that electrodeposition is used to deposit a metal or a mixture of metals to form a textured metal surface. For example Cr, **Ni**, Pd, Pt, Ru, Os, Rh, Ir, Au or Cu or mixtures thereof or silver may be electrodeposited by this method (page 3, lines 8-30). Electrodeposition takes place in any suitable solution in order to deposit the metal layer on the substrate. Such solutions will be **familiar** to those with knowledge of electrodeposition (page 8, lines 20-24).

Lowenheim teaches that a solution of 225-375 g/l nickel sulfate, 30-60 g/l nickel

Art Unit: 1753

chloride, 30-40 g/l boric acid, 0 g/l sodium sulfate, 0 g/l sodium tungstate and 0 g/l cobalt chloride at pH 1.5-4.5 and 45-65°C is the Watts Nickel Bath (page 213, Table 12-14).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the nickel or nickel alloy described by Kruger with wherein the biaxially textured metal is electroplated in a plating solution comprising 100~400 g/l nickel sulfate, 0~70 g/l nickel chloride, 20~80 g/l boric acid, 0~50 g/l sodium sulfate, 0~10 g/l sodium tungstate and 0~10 g/l cobalt chloride at pH 1.5~7 and 50~80°C because this plating solution would have been a suitable solution to electrodeposit the nickel layer and would have been familiar to those with knowledge of electrodeposition (as The Watts Nickel Bath) as taught by Lowenheim (page 213, Table 12-14).

III. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 101 36 890 ('890), Kruger et al. (US Patent Application Publication No. 2004/0206630 A1) and WO 01/83855 ('855) as applied to claims 1, 3 and 8 above, and further in view of Van Horn ("Pulse Plating", Dynatronix, August 5, 1999, pp. 1-13).

DE '890, Kruger and WO '855 are as applied above and incorporated herein.

The method of Kruger differs from the instant invention because Kruger does not disclose the following:

- a. ; Wherein the biaxially textured metal layer is deposited in a plating solution

under conditions of a cathode current density of 3~20 A/dm², a cathode current time of 1~100 msec and a down time of 1~100 msec using the pulse current electroplating process (PC process), the deposited metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane, as recited in claim 4.

b. Wherein the biaxially textured metal layer is deposited in a plating solution under conditions of a cathode current density of 3~20 A/dm², a cathode current time of 1~100 msec and an anode current time of 1~100 msec using the periodic reverse current plating process (PR process), the deposited pure metal or alloy layer having a texture fraction (TF) of 0.97 or more on the (001) plane, as recited in claim 5.

WO '855 teaches that the current density is typically from 1 to 50000 A/m² (page 7, line 31).

Van Horn teaches a pulse current electroplating process (PC process) [page 9, Fig. 1] and a periodic reverse current plating process (PR process) [page 10, Figure 4]. The most common advantages of pulse plating are producing fine-grained deposits; reducing the variation of thickness from one part to the next; increasing plating speeds; current efficiency is better than conventional DC plating; and reducing the need for organic additives by 50-60% (pages 1 and 2). Typical ON times are from 0.1 to 9.9 ms and typical OFF times are from 1 to 99 ms (page 2, last paragraph).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating process described by Kruger with wherein the biaxially textured metal layer is deposited in a plating solution under

conditions of a cathode current density of 3~20 A/dm², a cathode current time of 1~100 msec and a down time of 1~100 msec using the pulse current electroplating process (PC process), the deposited metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane; and wherein the biaxially textured metal layer is deposited in a plating solution under conditions of a cathode current density of 3~20 A/dm², a cathode current time of 1~100 msec and an anode current time of 1~100 msec using the periodic reverse current plating process (PR process), the deposited pure metal or alloy layer having a texture fraction (TF) of 0.97 or more on the (001) plane because modulation of the applied direct current would have improved the electrodeposition process as taught by Van Horn (pages 1 and 2).

As to wherein the deposited metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane, similar processes can reasonably be expected to yield products which inherently have the same properties. *In re Spada* 15 USPQ 2d 1655 (CAFC 1990); *In re DeBlauwe* 222 USPQ 191; *In re Wiegand* 86 USPQ 155 (CCPA 195).

Furthermore, Kruger, WO '855 and Van Horn appear to disclose a method at least in a similar manner as instantly claimed. There does not appear to be any method (step) limitations set forth in the instant claims to distinguish the instant claims from the prior art. Therefore, it would have been within one having ordinary skill in the art to expect that a metal layer having a texture fraction (TF) of 0.97 or more on the (001) plane was deposited.

Art Unit: 1753

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

Art Unit: 1753

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

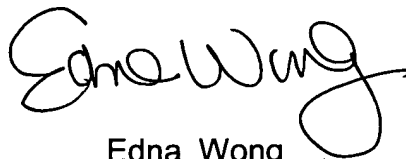
For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Edna Wong", with a stylized, flowing script.

Edna Wong
Primary Examiner
Art Unit 1753

EW
August 27, 2006